OBJECT RECOGNITION SYSTEM FOR SCREENING DEVICE

User's Manual

I. Requirements

The application can be executed in any personal computer running Microsoft Windows 9X, Microsoft Windows NT, and their variants.

II. Step-by-Step Installation Procedure

1. Run windows explorer, and browse the installation CD.
2. Run *Object Recognition for Screening Device.exe*
   [Object Recognition for Screening Device] by double clicking it.
3. Accept the default installation folder (*C:\EOD*) or enter a new one.
4. Choose to unzip the application.
5. Close the installation window.
6. Browse the installation folder. If the installation completed perfectly, there should be sixteen (16) files in the installation folder.
7. Run *EOD.EXE* [EOD] by double clicking it.

III. Acquiring Data

The application can get its input either from an external input device or a bitmap file. The *recognition* command will not be active until data is properly loaded.

1. Getting Input from a Bitmap File

There are several bitmap files included for demonstration: *Sample.bmp, Sample2.bmp,* and *Sample3.bmp.*

To load a file, click the *open* command on the toolbar, and select the desired bitmap file.

2. Getting Input from an External Input Device

This option may only be chosen if there is an external input device such as an x-ray screening device attached to the system. Otherwise, users should opt to load a bitmap file (option 1).

To choose an external input device from several input devices attached to the system, click the *select source* command 🔲 on the toolbar, and select the desired input device.

After choosing an external input device, acquire data by clicking the *acquire command* 🔲 on the toolbar. The acquisition process depends on the individual input device and the driver used to control the input device.

IV. Recognizing objects

After data is properly acquired either from an external input source or from a bitmap file, the *recognition command* 🔲 will be activated. Executing this command will start the recognition process.

After the completion of the recognition process, a list of object categories will appear. The list of object categories includes *"Dangerous Items"*, *"Suspicious Items"*, *"Questionable Items"*, and *"All Items"*. The categories can be changed by editing CAT_01.dat (questionable), CAT_02.dat (suspicious), and CAT_03.dat (dangerous).

Double clicking an object category expands or collapses the category. By expanding an object category, all objects that belong to that category will be displayed.

Choosing an object representation under an object category pinpoints the location of the object (see figure.1).
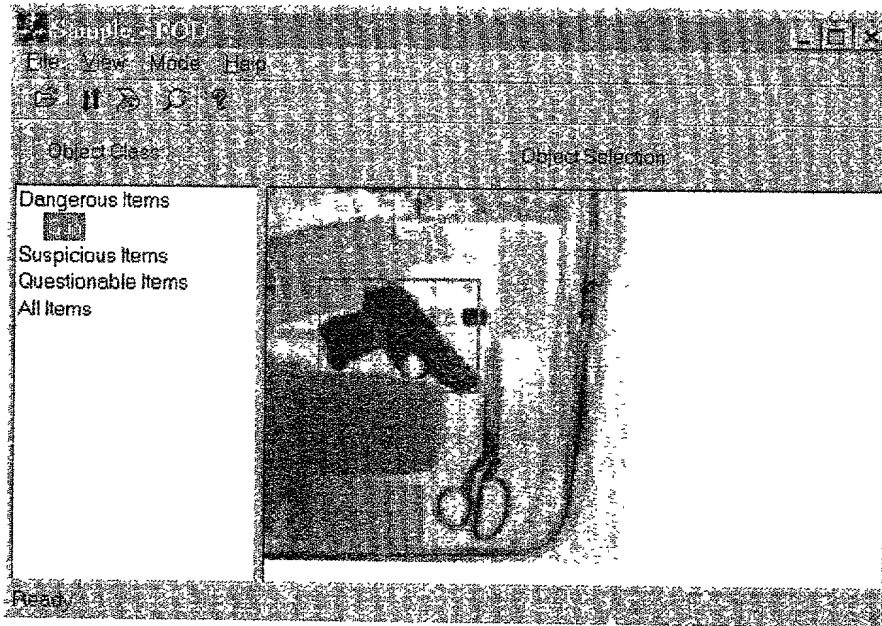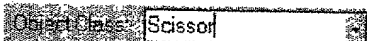
Figure.1

The application pinpoints an object (a gun) under *Dangerous Items* category

V. Training the System to Recognize a New Object

To train the system, switch the mode to training by choosing menu item *mode→train*.

Click on the *left* and *right* arrow to the right of the *Object Selection* to choose a new object to recognize. For the demonstration, click the arrows until the image of the scissor appears. Enter the class of the object by filling the *Object Class* . For the demonstration, type *Scissor*. Click *train button* to start the training process.

If the training process succeeded, the system is now able to recognize the scissor and put it under "*Suspicious Items*" category. However, executing the installation program will overwrite the new weight, and reset the program to its default state.
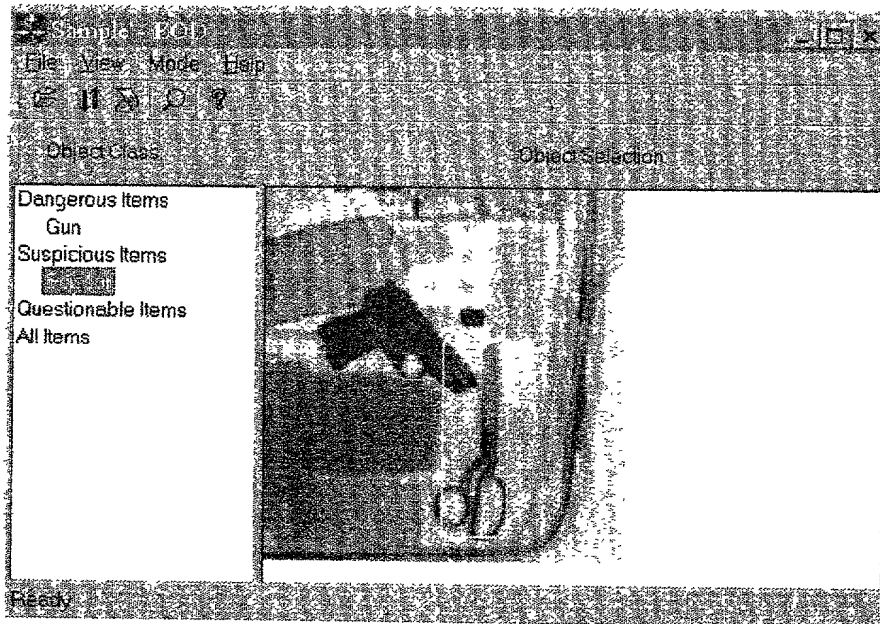
Figure.2

The application pinpoints an object (a scissor) under *Suspicious Items* category

Table of Contents